

## REMARKS

Claims 2 - 15, 25, 26, 31, 38 - 44, 46 and 47 remain active in this application. Claims 1, 16 - 24, 27 - 30, 32 - 37 and 45 have previously been canceled. Claims 13, 38 and 44 have been amended as required by the Examiner and to further emphasize an error in interpretation of the claimed subject matter by the Examiner as will be discussed more fully below. Support for the amendments of the claims is found throughout the application, particularly in Figures 2 and 3 and the description thereof on pages 11 - 12 of the disclosure as originally filed. No new matter has been introduced into the application.

Claims 2 - 15, 25, 26, 31, 38 - 44, 46 and 47 have been rejected under 35 U.S.C. §112, first paragraph as failing to comply with the Written description requirement. This ground of rejection is respectfully traversed, particularly as being moot in view of the amendments made above.

Initially, it is respectfully pointed out that the claim language now criticized by the Examiner was presented responsive to and closely following interviews of December 15, 2006, and June 7, 2007, with the Examiner and/or her supervisor, Mr. Ashley, at which it appeared that the additional *explanation* of the invention within the claims was desired and that the Examiner was satisfied with the claim language in regard to the written description requirement as of the interview of June 7, 2007. However, it is respectfully pointed out that there is no requirement for such *explanation* of the invention in the claims and such language is deemed superfluous to *definition* of the invention. Therefore, the criticized language has been deleted without,

however, acquiescing in the asserted ground of rejection or making any admission of the propriety thereof. Specifically, the accuracy of the criticized language of claim 13 is believed to be abundantly evident from the original disclosure as will be discussed in greater detail below. The criticized language in claims 38 and 44 sought to state a difference between the area of the puddle and the area on which the laser beam directly impinges at any given time, contrary to an incorrect understanding by the Examiner which will also be addressed in detail below as it was in the above-noted interviews and for which possibly more acceptable language, unquestionably supported by Figures 2 and 3 and the discussion on pages 11 - 12 has been substituted.

Since the criticized language has been deleted, it is respectfully submitted that this ground of rejection has been rendered moot and, upon reconsideration, should be withdrawn. Accordingly, such action is respectfully requested.

Claims 46 and 47 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite. This ground of rejection is also respectfully traversed.

The essence of this asserted ground of rejection appears to be that claims 46 and 47 contradict the language of claims 38 and 44, respectively, that was criticized in the ground of rejection discussed above and which recited that the area on which the laser beam impinges and the area of the puddle (or the area being clad) are different (as remains required by the language substituted in the above amendment) and insisting that the coaxial powder feeder (e.g. a blade powder feeder coaxial with the laser beam) infers a requirement that the area on which the laser beam impinges and to which the powder is applied *must be identically the same area*.

This latter inference insisted upon by the Examiner has been repeatedly addressed and demonstrated to be incorrect in previous responses and in the above-noted interviews and it is again respectfully submitted that such an inference does not at all logically follow from the nature and geometry of a powder feeder which is "coaxial" and is demonstrably contrary to the disclosure *at an important point of distinction of the invention from the prior art.*

In this regard the Examiner's attention is respectfully called to the attached Sketch sheets A and B. It is noted that sketches similar to the illustrations on Sketch sheet B have been drawn for the Examiner and her Supervisor in both of the above-noted interviews while the illustrations on sketch sheet B are side views of the laser beam and powder application nozzle corresponding to Sketch sheet A and also corresponding to the geometry of Figure 2 of the application as originally filed but for showing a concentric powder application nozzle or "coaxial feeder" as disclosed on page 10 of the original application rather than a "side feeder" as also disclosed on page 10 as equally suitable for practice of the invention and as illustrated in Figure 2 of the application as originally filed. The upper illustration on each sheet illustrates the relationship of the puddle, the area on which the laser beam directly impinges and the area to which blade material powder is applied upon initial formation of the puddle and before the laser and powder application nozzle are moved while the lower illustration on each sheet illustrates the relationships of the same areas while the laser beam and nozzle are in motion over the base material.

First of all, it seems utterly intuitive and beyond

question that the area of the puddle (and the "area being clad" which are identified with each other in at least Figure 3 as originally filed) will be different from and larger than the area upon which the laser beam directly impinges due to inevitable heat conduction in the base material, given sufficient heat to create a puddle, as disclosed as well as due to the scanning of the laser beam as explicitly disclosed and claimed, precisely as illustrated in Figure 2 and disclosed on pages 11 and 12 of the original specification, as is also shown in the illustrations in sketch sheet A where the lateral extent of the puddle/molten pool is significantly larger than the area on which the laser beam directly impinges. By comparison of the illustrations on Sketch sheet A, it is clearly seen that the only difference between the illustrations is the "tail" of the puddle/molten pool which trails the laser beam and nozzle and diminishes in depth as the puddle/molten pool cools.

The geometry of the laser beam and the coaxial powder feeder are also illustrated on sketch sheet A and it is clear that a coaxial nozzle is capable of depositing blade material powder on the puddle/molten pool, particularly at its periphery, without the principal trajectory of the powder as established by the coaxial feed nozzle intersecting the laser beam and that as the laser beam and nozzle move, the entire area of the puddle/molten pool would have the blade material powder applied thereto. Substantially the same effects would be developed by one or more side feeder powder application nozzles except that the distribution of powder would correspond to the locations of the side feeder nozzle(s) and would not necessarily surround the laser beam.

The geometry is illustrated in plan view in the illustrations on Sketch sheet B. In the upper

illustration (upon puddle formation but before the laser beam and powder application nozzle are moved), a plurality of concentric area are clearly evident. The smallest, at the center of the illustration is the area upon which the laser beam directly impinges. The area of the puddle/molten pool underlies the area of impingement and the boundary thereof surrounds the area of impingement of the laser beam by a substantial distance since the puddle/molten pool is necessarily larger than the area upon which the laser beam directly impinges. The area in which the powder is applied by a coaxial feeder is annular and the central region where no blade material powder is directly applied is clearly separated from the area of direct impingement of the laser beam by an annular gap while the powder drop area overlies the periphery of the puddle and covers a substantial area thereof, particularly when the laser beam and coaxial nozzle are in motion, as illustrated in the lower illustration of Sketch sheet B.

Therefore, it is clearly seen that the Examiner is clearly incorrect and fails to follow a logical line of reasoning in inferring that the area of impingement of the laser beam and the area of application of blade material powder must necessarily be identically the same, especially on the basis of a "coaxial feeder" being disclosed as suitable for practice of the invention, or that claims 46 and 47 necessarily contradict the claims from which they depend which, as the Examiner observes, recites that the areas are different; which distinction is substantively maintained in the language substituted in the above amendment for the language criticized by the Examiner and which is unquestionably fully supported by original disclosure and clearly evident in original Figure 2.

By the same token, it is respectfully submitted that the Examiner's remark appended to the current action are more semantic than substantive and evidence confusion on the same issue as discussed above. For example, the Examiner seeks to draw an admission from remarks in the amendment filed February 6, 2006, that the blade material is introduced into the heated area while heating said area or the recitation of introducing metal into said path while heating said path in original claim 10. As pointed out above, because of heat conduction (and possibly other mechanisms) the "heated area", particularly of the puddle/molten pool can extend well beyond the area on which the laser directly impinges. In regard to original claim 10, it is abundantly and intuitively evident that the laser does not simultaneously heat the entirety of the blade path when, as disclosed, it is scanned along that path in order to do so and the powder material can certainly be introduced into a currently molten portion of the path while the laser is melting material along the path to extend the path and without requiring that the area for application of blade material powder and the area of direct impingement of the laser beam being the same or the power trajectory and the laser beam intersecting at all. Therefore, it is respectfully submitted that no admission supporting the Examiner's erroneous inference can be properly drawn from these particular circumstances or any other aspect of the present application.

It is also respectfully submitted that both of the grounds of rejection asserted in the current action appear to be directed on the one hand, to requiring deletion of language which had been inserted to emphasize the distinction of the invention from the prior art and to correct an erroneous understanding of the invention by

the Examiner as well as, through the copious commentary in the rejection of claims 46 and 47 to assert that any claimed distinction from the prior art must be erroneous. It is respectfully submitted to be improper to seek to buttress one ground of rejection with another, particularly where both grounds of rejection are demonstrably improper and which rely on an erroneous understanding and illogical conclusion grounded merely in semantics. It is respectfully submitted to be especially improper to do so, in an effort to preclude use of certain language which would be evident to those skilled in the art in view of the original disclosure to define the invention and/or force use of language which might be more readily arguable as being readable on prior art, as might be the case if the Examiner's inference of identity of the laser impingement area and the powder application area was correct. Accordingly, in the above amendment, language has been substituted which is unquestionably supported by at least the drawings and supporting discussion in the original application and which cannot be contradicted, as demonstrated above, by claims 46 and 47 while clearly reciting an important distinction from the prior art of record in which the cladding powder is applied to intersect the laser beam to be melted thereby rather than applying the powder to the "area being clad" which has been shown to correspond to the "puddle"; a recitation which the Examiner does not criticize.

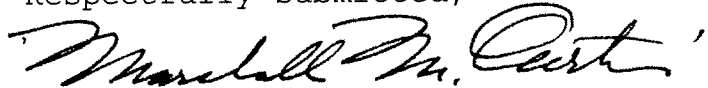
Accordingly, it is respectfully submitted that all grounds of rejection contained in the current action have been fully answered and that no basis has been provided for again asserting previous grounds of rejection that have been overcome. Both currently asserted grounds of rejection have been shown to be in error and untenable and, upon reconsideration should be withdrawn.

Therefore, such action and allowance of the application at an early date are respectfully requested.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

A petition for a three-month extension of time has been made above. If any further extension of time is available and required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



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Attachments:  
Sketch sheets A and B